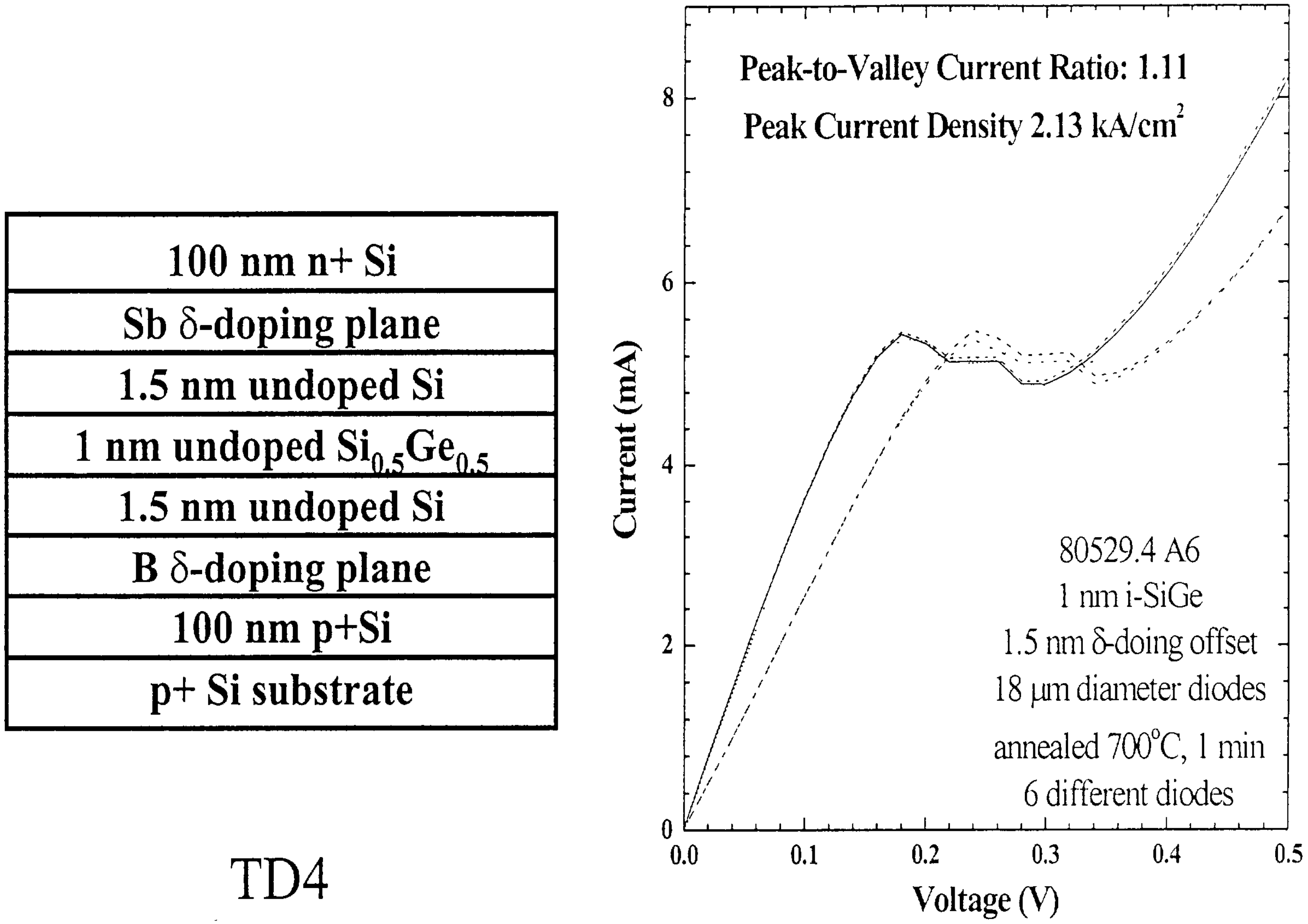
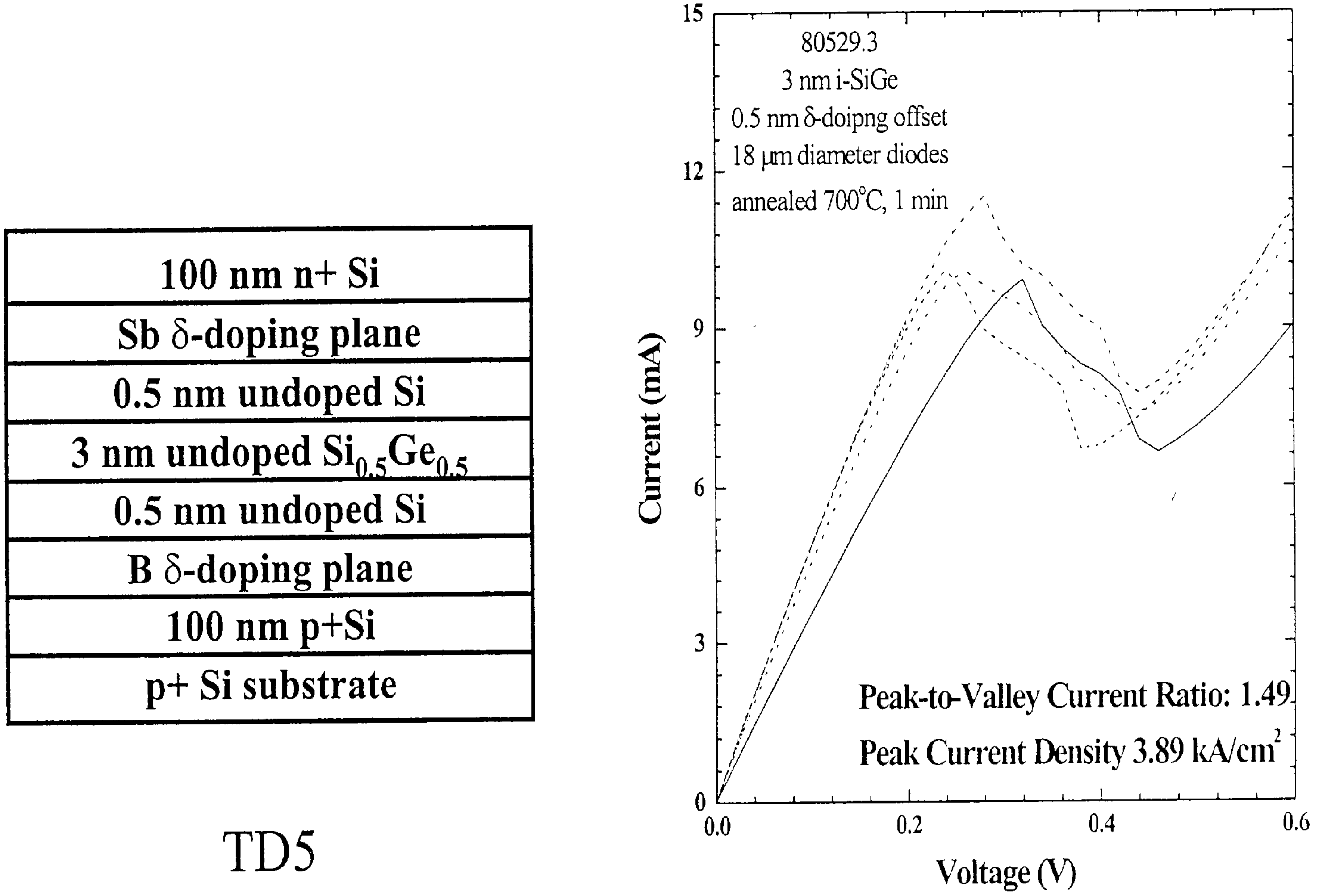

100 nm n+ Si
Sb δ-doping plane
1.5 nm undoped Si
1 nm undoped $Si_{0.5}Ge_{0.5}$
1.5 nm undoped Si
B δ-doping plane
100 nm p+Si
p+ Si substrate
TD4
Peak-to-Valley Current Ratio: 1.11
Peak Current Density 2.13 kA/cm^2
80529.4 A6
1 nm i-SiGe
1.5 nm δ-doing offset
18 μm diameter diodes
annealed 700°C, 1 min
6 different diodes
Current (mA)
0
2
4
6
8
Voltage (V)
0.0
0.1
0.2
0.3
0.4
0.5

(a)

(b)

Figure 10



TD5

(a)

(b)

Figure 11

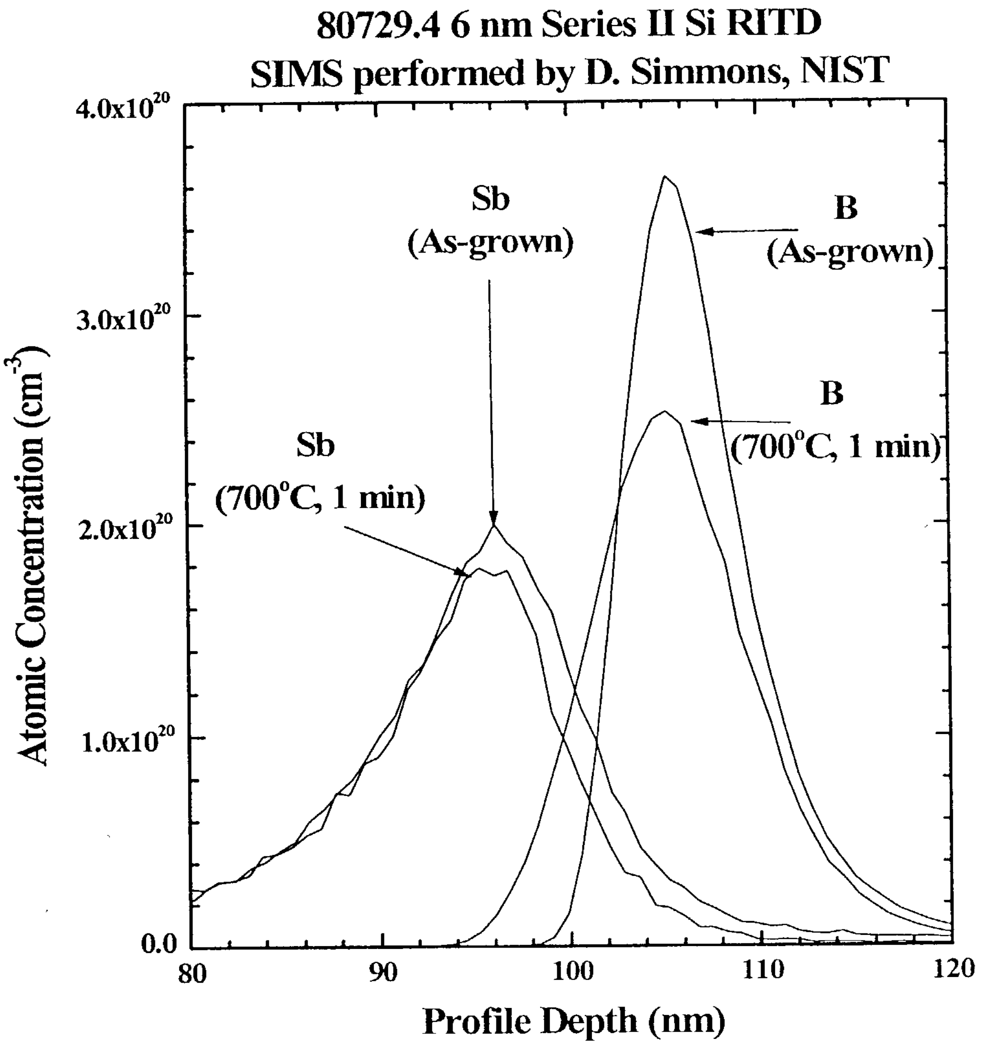
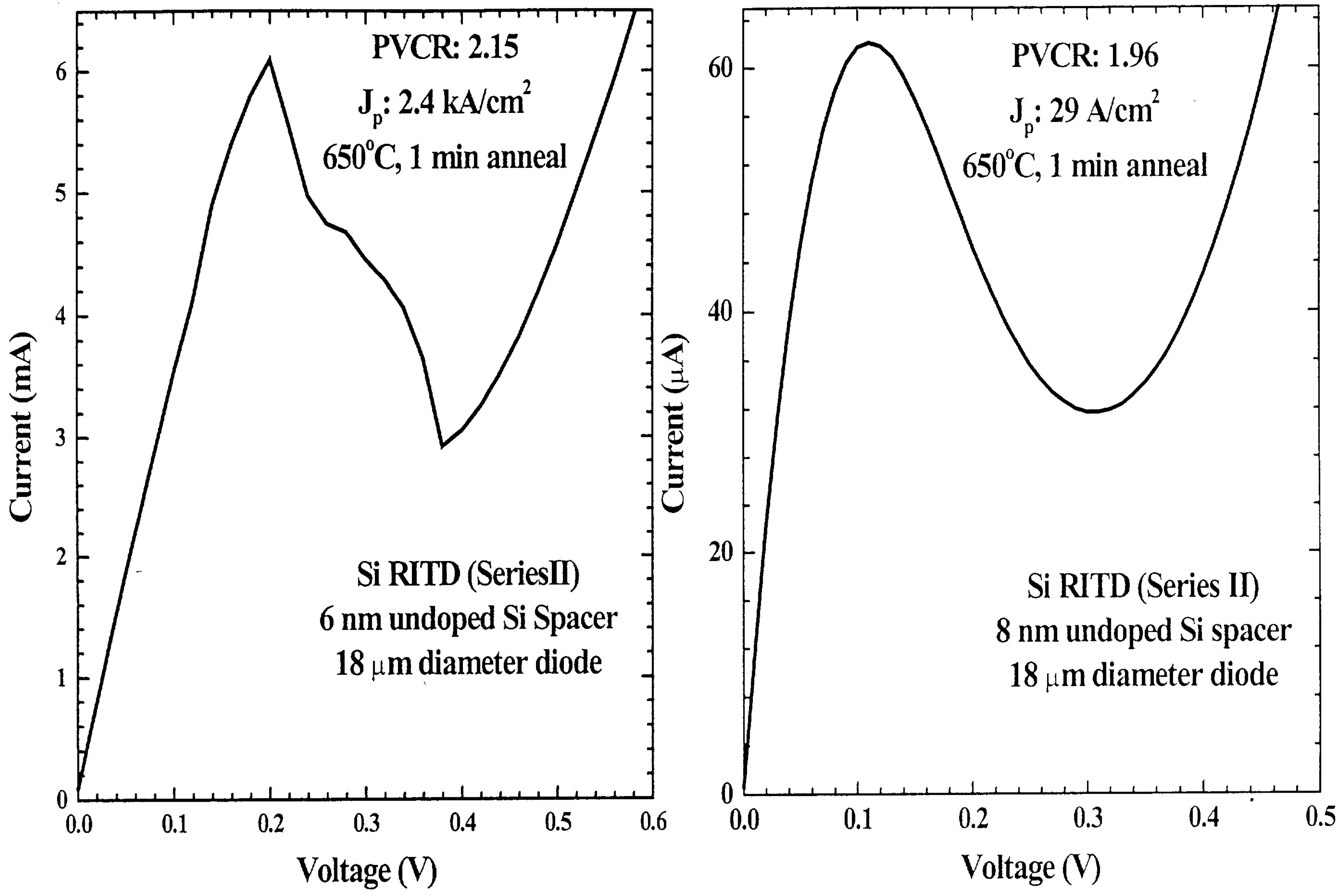
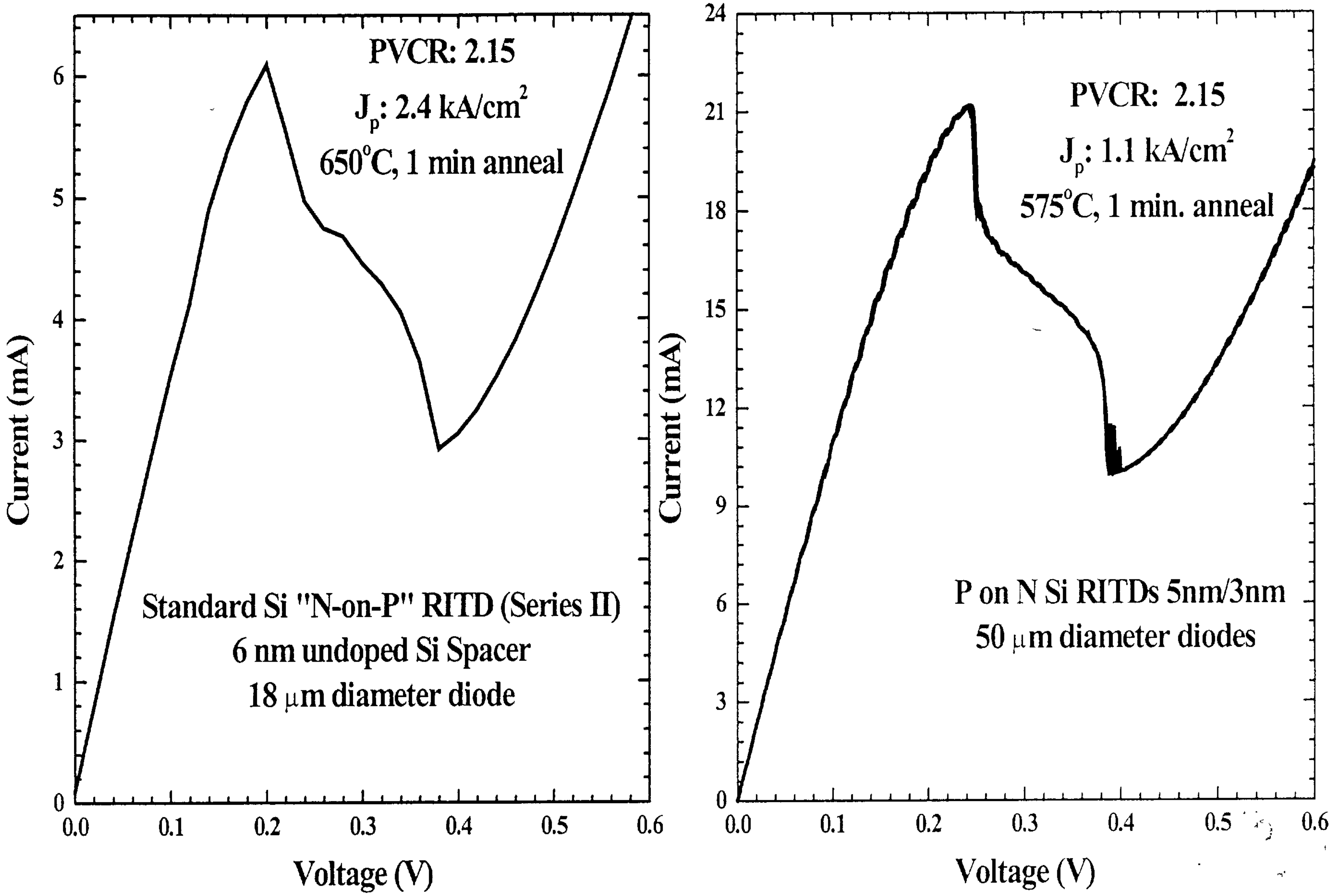

80729.4 6 nm Series II Si RITD
SIMS performed by D. Simmons, NIST
Atomic Concentration (cm^{-3})
4.0x10^{20}
3.0x10^{20}
2.0x10^{20}
1.0x10^{20}
0.0
80
90
100
110
120
Profile Depth (nm)
Sb
(As-grown)
B
(As-grown)
B
(700°C, 1 min)
Sb
(700°C, 1 min)

Figure 15


PVCR: 2.15
J_p: 2.4 kA/cm^2
650^{o}C, 1 min anneal
Si RITD (SeriesII)
6 nm undoped Si Spacer
18 μm diameter diode
Current (mA)
0
1
2
3
4
5
6
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Voltage (V)
PVCR: 1.96
J_p: 29 A/cm^2
650^{o}C, 1 min anneal
Si RITD (Series II)
8 nm undoped Si spacer
18 μm diameter diode
Current (μA)
0
20
40
60
0.0
0.1
0.2
0.3
0.4
0.5
Voltage (V)

(a) (b)

Figure 16


PVCR: 2.15
J_p: 2.4 kA/cm^2
650°C, 1 min anneal
Standard Si "N-on-P" RITD (Series II)
6 nm undoped Si Spacer
18 μm diameter diode
Current (mA)
0
1
2
3
4
5
6
Voltage (V)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
PVCR: 2.15
J_p: 1.1 kA/cm^2
575°C, 1 min. anneal
P on N Si RITDs 5nm/3nm
50 μm diameter diodes
Current (mA)
0
3
6
9
12
15
18
21
24
Voltage (V)
0.0
0.1
0.2
0.3
0.4
0.5
0.6

(a)

(b)

Figure 20